

Repair Instructions

1 Service strategy

	Test	Repair
Inspection	PMS Procedure	Minor repair Filter replacement, if necessary Hoses Fuses
On-site repair	PMS Procedure	Assembly replacement
Branch/Agency (workshop)	PMS Procedure	Assembly replacement
Lübeck (workshop)	PMS Procedure	Assembly replacement

2 Front view of the medical air compressor

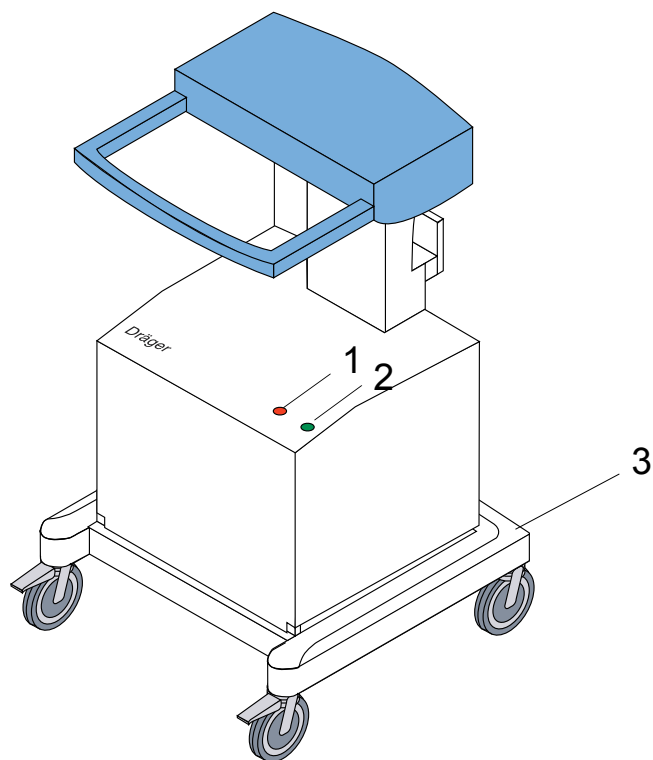
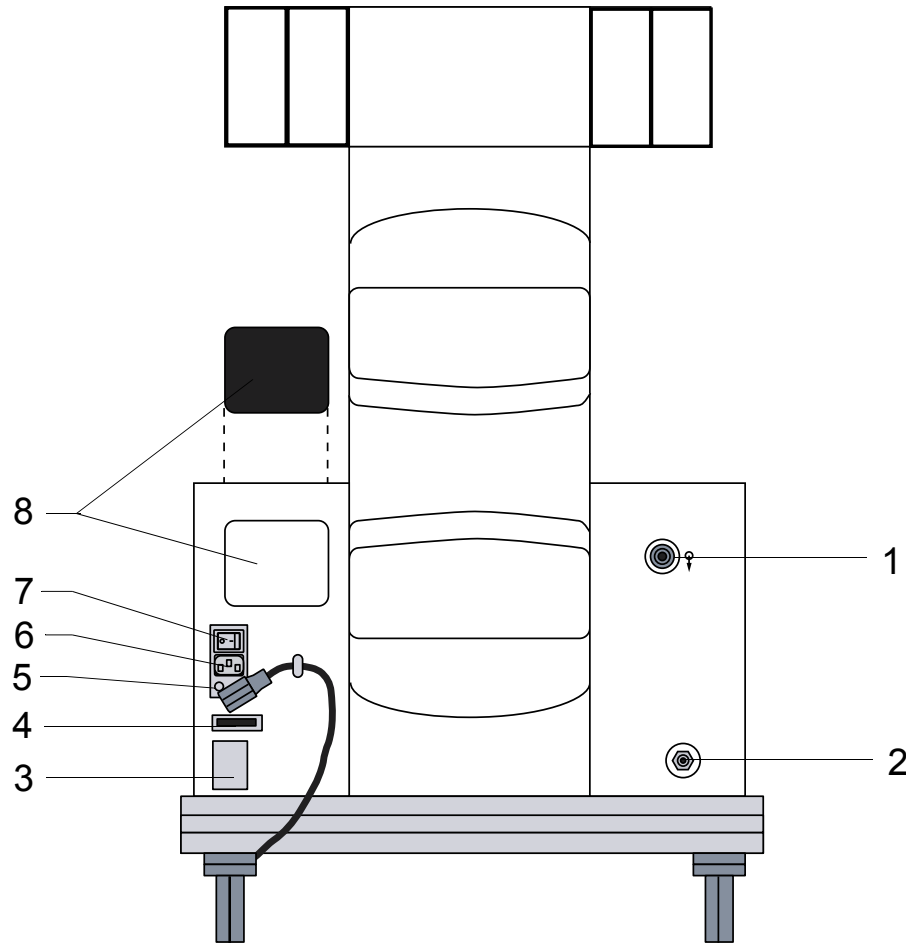


Fig. 1 Front view of the medical air compressor

Legend

- 1 Red "Overheat" indicator lamp
- 2 Green "Standby" indicator lamp
- 3 Trolley

3 Rear view of the medical air compressor

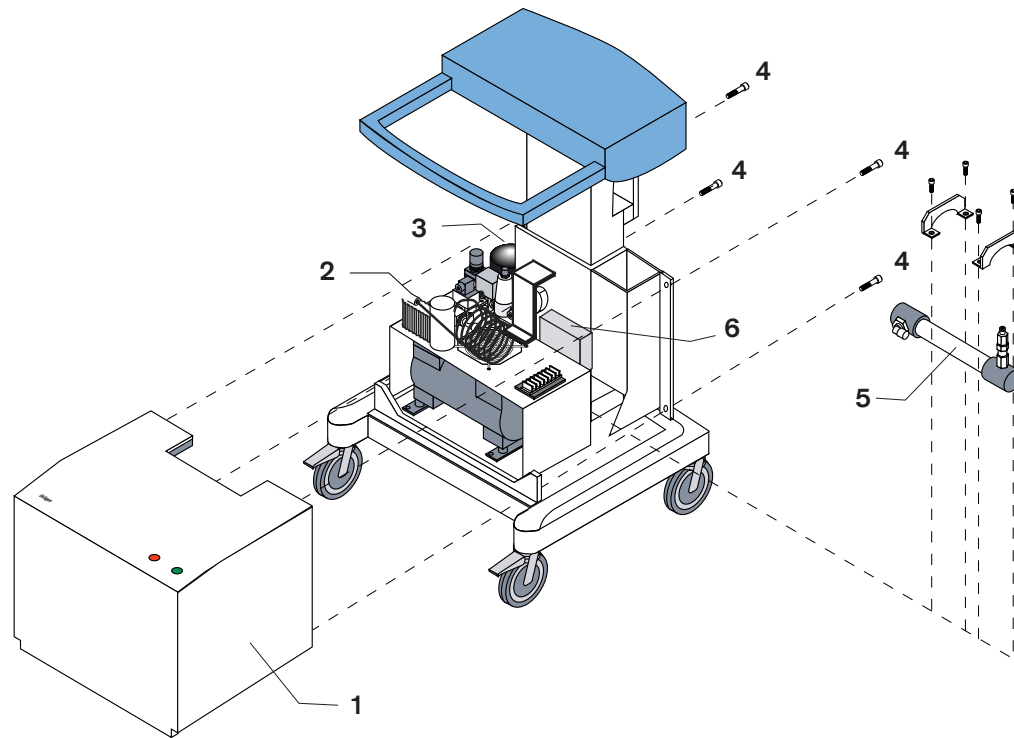


Legend

- 1 Connection for a ventilator
- 2 Standby (optional connection for central supply system)
- 3 Typeplate
- 4 Operating hours counter
- 5 Power fuses
- 6 Mains connection
- 7 ON/OFF switch
- 8 Suction channel with filter

Fig. 2 Rear view of the medical air compressor

4 Layout of the assemblies (1)

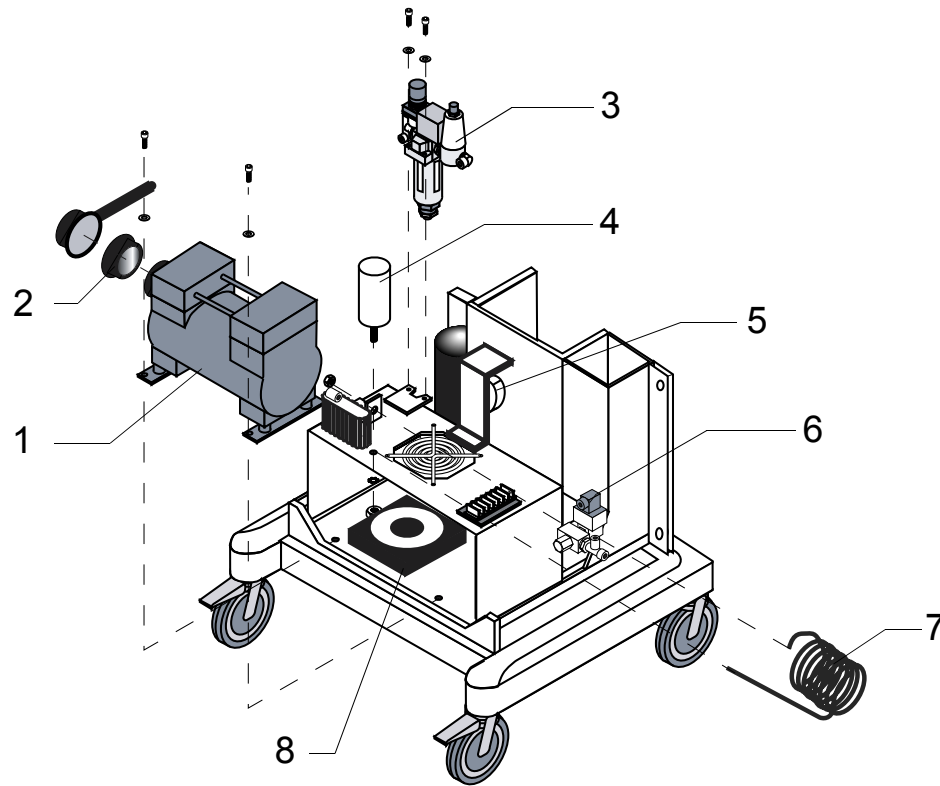


Legend

- 1 Protective cover
- 2 Heat exchanger
- 3 Pressure vessel
- 4 Fixing screws
- 5 Diaphragm drier
- 6 Pressure switch (switchover optional)

Fig. 3 Layout of the assemblies (1)

5 Layout of the assemblies (2)



Legend

- 1 Compressor
- 2 Suction filter
- 3 Filter assembly (prefilter and main filter)
- 4 Starting capacitor
- 5 Buzzer
- 6 Solenoid
- 7 Cooling coil
- 8 Fan

Fig. 4 Layout of the assemblies (2)

6 Opening the medical air compressor



Hazardous voltage. Touching live components can lead to serious injury or death.

Pull the power plug out of the AC outlet before opening the device.

- 1 Remove the fixing screws from the cover, see [Fig. 3](#).
- 2 Carefully pull the protective cover back until the cable of the indicator lamp can be accessed.
- 3 Unscrew the Phillips screw ([Fig. 5/1](#)) from the connector.
- 4 Pull out the connector ([Fig. 5/2](#)).
- 5 Remove the protective cover completely.

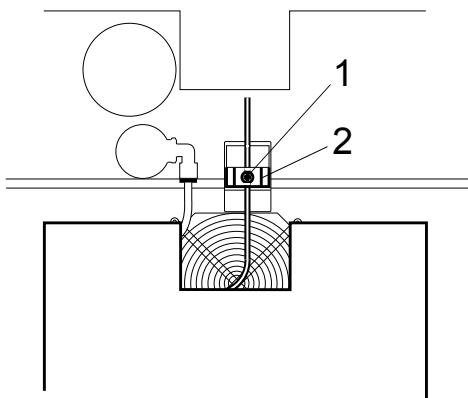


Fig. 5 Indicator lamp connector

7 Replacing the filter sleeves of the prefilter and main filter

The following replacement description of the prefilter and main filter refers to the maintenance kit 84 11 546 (see also "[Change information](#)" and PMS procedure).

For a replacement description of the new prefilter and mainfilter (maintenance kit 84 14 501), see the Instructions for Use under "[Maintenance intervals/Removing the filter group](#)".

7.1 Removing the filter assembly

- 1 Unscrew fixing screws of protective cover, for fixing screws see [Fig. 3](#).
- 2 Open the unit, see [6](#).
- 3 Unscrew both Phillips screws ([Fig. 6/1](#)).

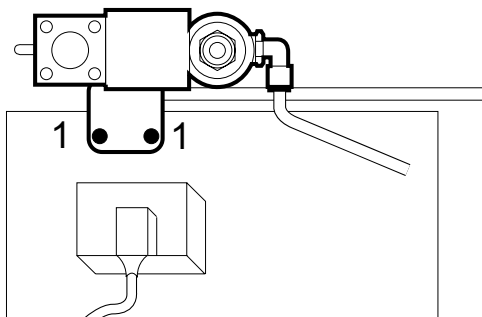


Fig. 6 Removing the filter assembly

- 4 Push ring ([Fig. 7/2](#)) back and hold.
- 5 Remove hoses ([Fig. 7/3](#)).
- 6 Remove the filter assembly.

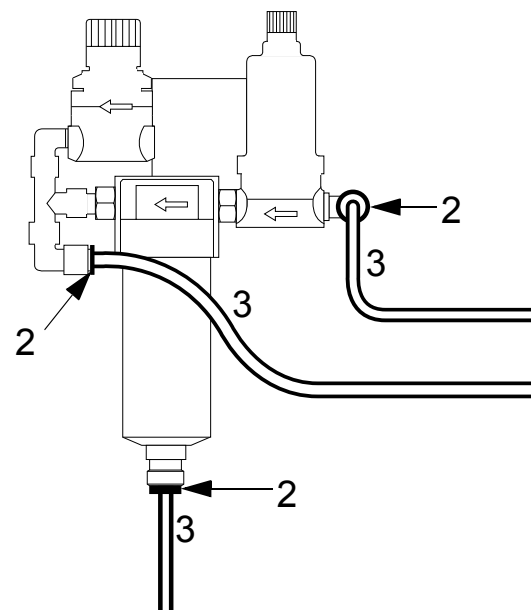


Fig. 7 Removing the filter assembly

7.2 Replacing the filter sleeve of the prefilter

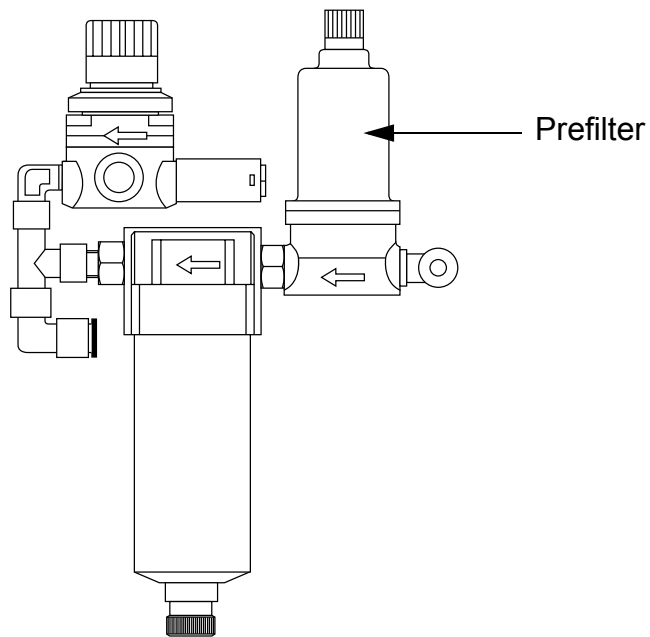


Fig. 8 Prefilter

- 1 Unscrew housing (Fig. 9/1) by hand.
- 2 Unscrew clasp nut (Fig. 9/2).
- 3 Remove filter sleeve (Fig. 9/3) and replace with new one.
- 4 Tighten clasp nut (Fig. 9/2).
- 5 Remove O-ring (Fig. 9/4) from housing and replace it with a new one.
- 6 Tighten housing (Fig. 9/1) by hand.

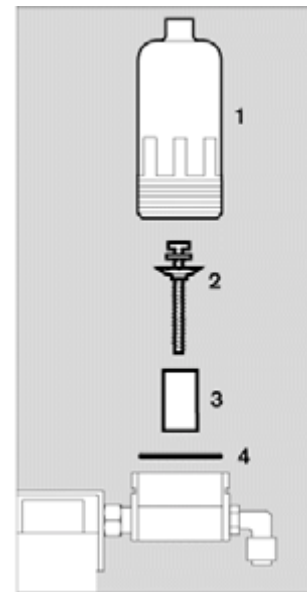


Fig. 9 Replacing the filter sleeve

7.3 Replacing the filter sleeve of the main filter

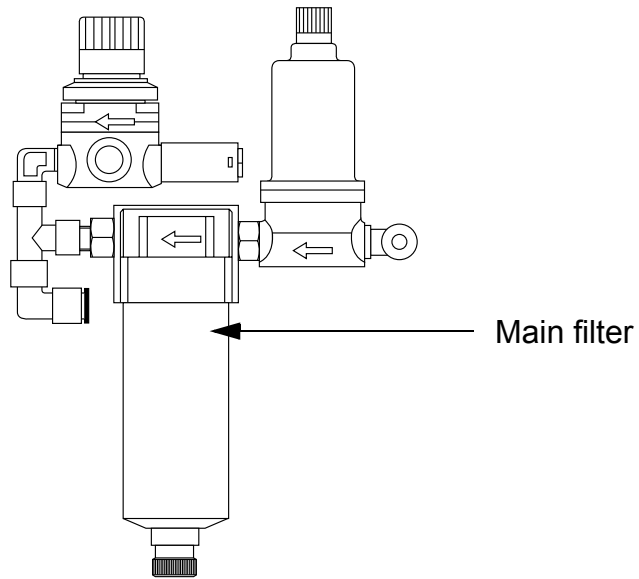


Fig. 10 Main filter

- 1 Pull interlock (Fig. 11/1) downwards and hold.
- 2 Rotate housing (Fig. 11/2) until markings (II) are aligned.
- 3 Remove housing (Fig. 11/2).

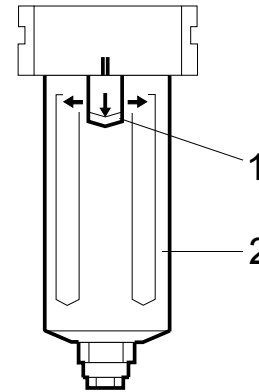


Fig. 11 Removing the main filter housing

- 4 Unscrew clasp nut (Fig. 12/4).
- 5 Remove filter sleeve (Fig. 12/3) and replace with new one.
- 6 Tighten clasp nut (Fig. 12/4).

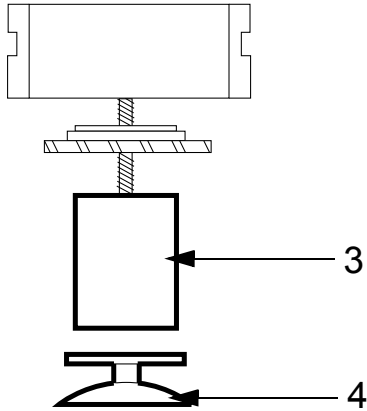


Fig. 12 Replacing the filter sleeve

- 7 Remove O-ring (Fig. 13/5) from housing and replace it with a new one.

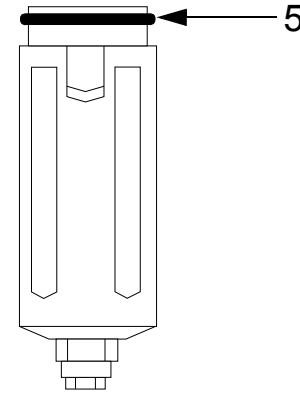


Fig. 13 O-ring of the main filter

- 8 Fit housing (Fig. 14/6) and rotate until markings (II) are aligned and interlock (Fig. 14/7) engages audibly.
- 9 Pull housing (Fig. 14/6) slightly downwards to check whether it is securely engaged.

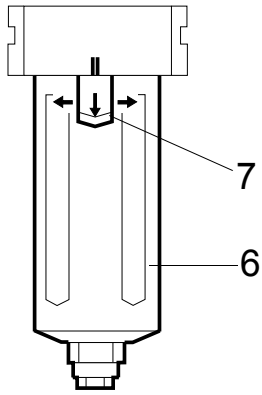


Fig. 14 Locking the main filter housing in place

7.4 Replacing the suction filter

- 1 Unscrew both Allen screws (Fig. 15/1).
- 2 Unscrew pressure hose (Fig. 15/2) using open-end wrench WAF 19.
- 3 Pull compressor out until filter housing (Fig. 15/3) becomes accessible.
- 4 Rotate filter housing (Fig. 15/3) clockwise and remove.
- 5 Remove suction filter (Fig. 15/4) and replace with new one.

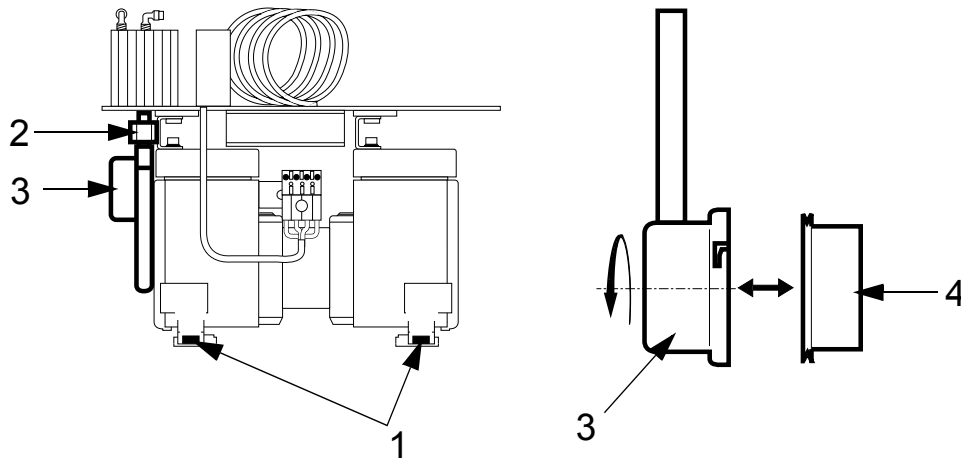


Fig. 15 Replacing the suction filter

- 6 Re-install the suction filter (Fig. 15/4).
- 7 Re-install the compressor.

7.5 Fitting the filter assembly

Fit the filter assembly using the reverse method as used for disassembly.

8 Standby switch of the medical air compressor (8413419)

8.1 Resetting the working pressure range

- 1 Set up a ventilator including test circuit.
- 2 Connect to gas supply.
- 3 Connect external pressure regulator/gauge to standby inlet. (Gas inlet connector is located at rear panel in the upper right area)
- 4 Connect the AIR central supply hose to the pressure regulator hose.
- 5 Connect the AIR supply of the compressor/ventilator.



Do not connect to the O2 central supply. Do not connect to mains power supply yet.

- 6 Remove the four screws from the rear panel of the compressor.
- 7 Slide protective cover of compressor open (about 25 cm).
- 8 Remove dark plastic cover from standby switch (located directly behind the transformer on the right side and is secured with 2 screws).



Fig. 16 Medical air compressor, open

- 9 Connect ventilator and compressor to mains power supply.
- 10 Switch compressor on.
- 11 Switch ventilator to standby mode and activate Service Mode to monitor internal pressures.
- 12 Measure current switching points and set delta P to <15psi (<1 bar) (adjusting screws is located in the lower portion of the switch).



With compressors that were shipped world-wide, proceed to work steps 13 to 17.

With compressors that were sold in the USA (as of serial number ARSB-0001), proceed to work steps 18 to 22.

- 13 Measure switching point and set starting pressure to 35 psi / 2.4 bar using external pressure regulator (adjusting screw is located in the center portion of the switch).

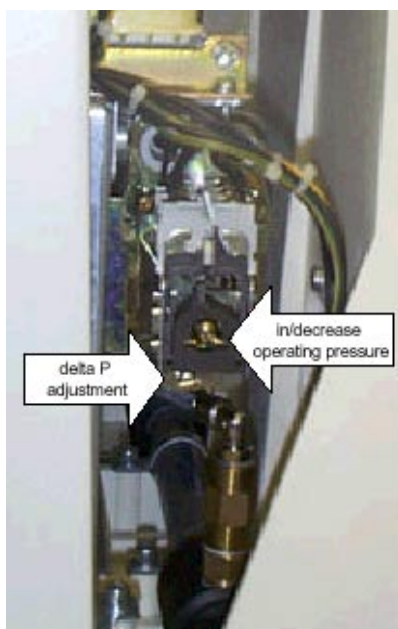


Fig. 17 Setting the working pressure



Compressor should start before the "AIR supply insufficient" alarm is triggered.

- 14 Measure switching point and set switch-off pressure to 50 psi / 3.4 bar using external pressure regulator (adjusting screw is located in the center portion of the switch).
- 15 Check settings of starting pressure (35 psi / 2.4 bar) and switch-off pressure (50 psi / 3.4 bar) under flow conditions as specified in the PMS Procedure (ventilator settings: CMV, flow max. (AutoFlow off), Vt max., rate 15, FiO2: 21).
- 16 Reassemble standby switch and compressor.
- 17 Remove external pressure regulator/gauge.
- 18 Measure switching point and set starting pressure to 40 psi \pm 1.5psi (2.7 bar \pm 0.1 bar) using external pressure regulator (adjusting screw is located in the center portion of the switch).

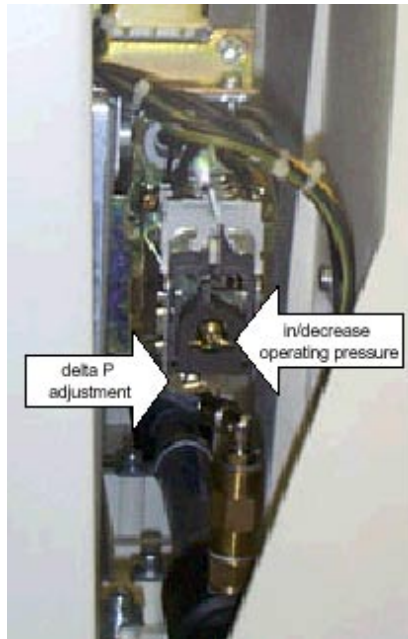


Fig. 18 Setting the working pressure



Compressor should start before the "AIR supply insufficient" alarm is triggered.

- 20 Check settings of starting pressure (40 psi / 2.7 bar) and switch-off pressure (46 psi / 3.2 bar) under flow conditions as specified in the PMS procedure (ventilator settings: CMV, flow max. (AutoFlow off) , Vt max., rate 15, FiO2: 21).
- 21 Reassemble standby switch and compressor.
- 22 Remove external pressure regulator/gauge.

- 19 Measure switching point and set switch-off pressure to 46 psi \pm 1.5 psi (3.2 bar \pm 0.1 bar) using external pressure regulator (adjusting screw is located in the center portion of the switch).

9 Change information



This change information is for information only, built-in components are only replaced with new versions in case of repair.

9.1 Prefilter housing

As of serial number ARML-0020, the prefilter housing is made of metal.

9.2 Thermostat (part of starter relay 84 12 856)

To avoid frequent alarms, the thermostat has been set from 40 °C to 75 °C. This change has been implemented in devices from serial number ARMM-0054 (84 13 900) or ARMN-0101 (84 13 419), respectively.

9.3 Glow lamps

Due to a change in the circuit of 110 V compressors, defective glow lamps will be replaced only with 230 V glow lamps (Red glow lamp: 8413869, green glow lamp: 8413870).

Due to a change to the cable harness, only the green 110 V glow lamp is used in US compressors as of serial number ARSB-0001.

9.4 Starter relay

The starter relay has been provided with a new timer. This change has implemented in series units starting with the following serial numbers: ARNJ-0088 (8413900), ARNJ-0017 (8413419), and ARNK-0031 (8413893).

9.5 Filter unit, new (84 14 502 / see also Service Bulletin no. 1)

To protect the diaphragm drier more efficiently, the filter unit has been equipped with a finer fine filter. A new maintenance kit is also available for the new filter unit. This change has been implemented in series units starting with serial number ARMJ-0020.

Further information: According to Technical Service Bulletin no. 1, this filter unit has to be replaced as well when a faulty diaphragm drier is replaced (a notice to do so has to be attached to the outside of the unit) because the new maintenance kit, P/N 8413501, has to be installed, too.

9.6 Standby, changed setting of working pressure range

The pressure range has been changed (as described in the Repair Instructions, section 8) due to the pressure supply of 3 bar available in different countries. The pressure range has been changed in compressors as of serial number ARPB-0001. At the same time, a modified non-return valve (no spare part) has been installed in the storage.

9.7 Registration of compressors

As of serial number ARPD-0001, compressors are subject to registration. The units are shipped with new Instructions for Use/Operating Instructions containing the changed pressure settings.